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THE HISTORY OF MOVABLE TYPE
FROM ITS INVENTION TO ITS DISPERSION IN 1462.

by

FLORENCE SHERWOOD WING

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THE HISTORY OF MOVABLE TYPE
FROM ITS INVENTION TO ITS DISPERSION IN 1462.

INTRODUCTION.

The subject of the invention of movable type is one that is shrouded in uncertainty.

Some writers believe it was the invention of no one man, but the final outcome of an idea which had long been developing. Others believe the idea came to different men, quite independently of each other, and still others believe it to have been invented by some one man, and that it was from his work that the successive printers gained their ideas. The question, therefore is, "Who was this man?" "Who was the inventor of printing?" It seems impossible to come at any definite conclusion concerning this question.

The documents and records which bear upon the subject have been consulted time after time, the books issuing from the early printing presses have been studied to find resemblances and variations in type to prove when and by whom they were printed, and still we have a diversity of opinions on the subject.

It will be necessary, therefore, to bear in mind that much of the history of printing is theory, and has no definite proof of its truth.

The possible inventor of movable type is to-day granted as being either Laurens Coster of Haarlem, Holland, or Johann Gutenberg of Mentz, Germany. The question as to which one was the inventor is one of endless controversy.

It is, however, believed by some that printing from movable type was first invented in China in the eleventh century and that the invention reached Europe from China. This theory seems to have had little weight with most of the authorities, who bend all their energies toward trying to find conclusive evidence that either Laurens Coster, or Johann Gutenberg was the inventor.

Before giving the evidence in favor of either Coster or Gutenberg, it may be well to give some idea of who these men were.

LAURENS JANSZOOM COSTER.

What is known of Coster is gleaned from an account given by the historian, Junius, in his *Batavia* printed in 1568. He speaks of him as a wealthy citizen of Haarlem who lived about 128 years ago, that is, 128 years before the publication of the *Batavia*, or about 1440. Junius tells how Coster, while walking in the wood one day, and while carving letters on the bark of

a birch tree for the amusement of his grandchildren, conceived the idea of movable type. He goes on to tell how he first used wooden types, but later used leaden ones, and how one night a servant stole some types, while the family were away, and went to Germany where he printed from them. Junius insinuated that this workman was John Gutenberg, but it has been proved that Gutenberg could not have been in Holland at that time.

The claims of Coster as to the invention of movable types are many and the belief in them seems to be increasing.

The exponents of the Coster theory have procured much evidence from writers of the later part of the century in which Coster lived, or of the succeeding century. In order to properly set forth Coster's claims, these will be given in chronological order.

EVIDENCES IN FAVOR OF COSTER.

- (1) Cologne chronicle, printed in 1499 by Johann Kollhoff on the authority of Ulrich Zell, gives valuable evidence. Ulrich Zell's veracity is unquestioned, and the utmost confidence can be placed in his testimony. The passage mentioned is as follows: * "Of the printing of books and when and by whom this art was discovered of which the utility can not be too highly appreciated etc.

Item; That this most revered art (of printing) was first discovered at Mentz in Germany, and it is a great honor to the German nation that such ingenious men were found in it. This happened in the year of our Lord MCCCCXL; and from that time until the year MCCCCCL the art, and what belongs to it, was rendered more perfect. In the year of our Lord MCCCCCL which was a golden year (or jubilee year) then men began to print; and the first book printed was a Bible in Latin, and it was printed in a larger character than that in which men now print mass books.

Item; Although the art is (was) invented in Mayence as aforesaid, in the manner it is now commonly used, the first idea originated, however, in Holland, from the Donatuses which men printed there even before that time; and from out of them is (has been) taken the beginning of the aforesaid art, and is (has been) invented much more masterly and cunningly than it was according to that same method, and is become more and more ingenious."

The paragraph respecting Holland is thus followed:-

"One named **Omnebonum** writes in a preface to the book called Quintillianus that a Waloon from France, named Nicholas Genson (Jenson), has first of all discovered this masterly art, but that is (has been) publicly denied; for they are still alive who bear testimony that books were printed at

*Sotheby, S.L., Principia typographia: 1858, 3:125.

Venice before said Nicholas Genson came there when he began to cut and prepare letters (types). But the first inventor of printing has been (was) a citizen of Mayence and was born at Strasburgh, a gentleman of this (that) place, John Gudenbuch (Gutenberg).

Item; From Mayence the aforesaid art came first of all to Cologne, afterwards to Strasburgh and thence to Venice. The beginning of progress of the aforesaid art was told me verbally by the honourable man, Master Ulrich Tzell (Zell) from Hanan, still a printer at Cologne anno 1494, by whom the aforesaid art came to Cologne.

Item; There are also some confident persons who say that books were also formerly printed; but that is not true, for in no other country books are found which were printed at that time."

It is believed that Hollhoff meant that the Donatuses printed in Holland were from movable types. The authenticity of the Cologne chronicle is undoubted and if this fact could be proved much would be done for the Coster claims.

(2) COOR^NHERT, a printer at Haarlem in 1461, published a Dutch version of Cicero's de Officiis, and states that he has often been informed that typography was invented in Haarlem though somewhat in rude form and that the art was afterwards carried to Mentz by an unfaithful servant.

(3) VAN ZUYREN wrote a treatise in Latin on the invention of printing about 1561. A large part of the book is lost, but some prefatory pages remain. He says: "It is from the love of my country alone that I undertake this work, and that I institute further inquiries upon the subject of it; as I cannot consent that our claims to a portion of this glory; claims which are at this day fresh in the remembrance of our fathers to whom, so to express myself, they have been transmitted from hand to hand from their ancestors, should be effaced from the memory of men and be buried in eternal oblivion; claims of which it is our duty to preserve the memorial for the benefit of our latest posterity.

The city of Mentz without doubt merits great praise for having been the first to produce and publish to the world in a becoming garb, an invention which she had received from us; for having perfected and embellished an art as yet unmade and unformed, who, indeed (though it is less difficult to add to an invention already made than to originate a new one) would withhold the praises and honour due to a city to which all the world considers itself in a particular manner indebted for so great a benefit?

For the rest, excellent Sir, you may consider it as certain, that

*Ottley W.Y., Inquiry concerning the invention of printing, 1863, P. 61.

the foundations of this splendid art were laid in our city of Haarlem, rudely indeed, but still the first.

Here (be it understood without offence to the people of Mentz) the art of typography was born and saw the light, with all her members formed, so that she might hereafter increase in strength and stature. Here, she for a long time received the treatment and the cares which it is customary to use toward tender infancy; and for a long series of years was confined within the walls of a private dwelling house, which, although somewhat dilapidated is still standing, but which has long since been dispoiled of its precious contents. The art of printing, indeed, was here brought up, nourished and maintained, at small expense, and with too great parsimony until, at length, despising the poor and confined appearance of her humble abode, she became the companion of a certain stranger; and leaving behind her native meanness, shewed herself publicly at Mentz, where after having become enriched, she in a short time rose to eminence."

(4) GUICCIARDINI. DESCRIZIONI DI TUTTI I PAESI BASSI 1457.

This book contains the following passage concerning printing.

* "According to the common tradition of the country, the evidences of several authors and also of ancient monuments, the art of printing was first invented in this town as well as that of casting letters (in moulds) and the inventor having died before he had carried his works to full perfection, one of his workmen went to Mayence when he divulged the secret of practising the art, and in that place so much care and attention was bestowed upon it, that it was brought to great completeness; and hence arose the opinion that it originated there. I neither will or can decide the question etc."

(5) HADRIANUS JUNIUS in 1568.

We have spoken before of the Batavia of Hadrianus Junius, published in 1568. This is the chief and most trustworthy evidence of Coster's claim. Junius was one of the noted men of the period and a well known historian. He says: "About 128 years ago, there lived at Haarlem, in a house of considerable size, and facing the royal palace, one Laurence, son of John, named Koster... It is this man who merits a glory ^{superior} to that of all conquerors, and who can justly claim the honor of the invention of the typographic art, an honor at the present usurped by others..."

Junius tells how the story of Coster had been told him by an old preceptor who had heard it from a certain Comelis, an old book binder of Haarlem, who had been one of Coster's workmen and had known the

*Humphreys H.N. History of the art of printing. 1868. P. 52

°Harper's magazine, Oct. 1868, 37:641

thief who had stolen Coster's types.

Investigators have found in the records of Holland, the name of Comelis, who was a book-binder.

(6) CIVITATES ORBIS TERRARUM. Cologne. 1570-80.

Gives a map of Haarlem with an account of the city, and here the honor of being the birth place of printing is given to Haarlem by a German authority.

(7) EYTZINGER in 1583 in a history of the low countries sets forth the claims of Holland.

*Angelo Rocca in the appendix to an account of the Vatican library printed at Rome in 1591 relates that the younger Aldus once shewed him a Donatus printed on parchment, on the first page of which was written as follows: "Johann Faust, a citizen of Mentz, the maternal grandfather of Johann Schoeffer, first found out the art of printing with types of brass, for which he afterwards substituted those of lead; his son-in-law Peter Schoeffer greatly assisting him in perfecting the art. But this Donatus or confessionalia was first of all printed from engraved blocks in Holland. Haec scripsit Mariangelus Accursius." The date of this note is supposed to have been about 1510. Rocca who mentions this note, also states that the types used by the inventors of printing were perforated, and connected together through them; of which he says he remembers to have seen specimens at Venice.

These records form the principal evidence in favor of Coster as the inventor of printing.

GUTENBERG.

Johann Gutenberg, the rival of Coster, as the inventor of printing has many exponents of his claims, who seem confident that the honor of the invention is due to him. The world, as a whole, seems to have accepted him as the inventor of the movable type. In June, 1900, the five-hundredth anniversary of Gutenberg's birth was celebrated at Mentz, Germany. Here learned men from all parts of Europe gathered to pay honor to Gutenberg as the inventor of printing. There seems, however, to be comparatively little evidence in his favor. What there is will be given later, after a brief outline of what is known of his life has been given.

*Ottley W.Y. Inquiry concerning the invention of printing 1863. P. 3

EARLY LIFE.

Johann Gutenberg was born in Mentz, Germany about 1400.

He was the son of Friele Gensfleisch and Else Gutenberg of Mentz.

Gutenberg took his mother's name, a custom common in Germany at that time, when there was danger of the mother's name becoming extinct.

The family were of the patrician class, and in the trouble between the burghers and noble classes of Mentz in 1420, were forced to leave the city.

What is known of Gutenberg's life from this time is gleaned from legal documents, the authenticity of many of which is doubted.

AT STRASBURG.

We learn that Gutenberg was in Strasburg in 1434, from the record of a suit brought by him against the town clerk of Mentz, then visiting in Strasburg. The suit was brought because of the failure on the part of the town clerk to pay money due to Gutenberg from Mentz property.

In 1436, Anne, called Zur Isernen Thur (Anne of the iron gate) brought a suit against Gutenberg for breach of promise. It is believed that Gutenberg married her, although little is heard of her in connection with him after this.

In 1439, a suit was brought against Gutenberg at Strasburg by the brothers Dritzehn. From the records of this trial we gain the knowledge that Gutenberg had entered into partnership with Andrew Heileman, Andrew Dritzehn and John Riffe for the purpose of carrying on three distinct trades. The first two are mentioned in the testimony as making mirrors and polishing stones and the third trade is mentioned only indirectly as "that thing", "the nice thing" etc. It is thought by some that this undertaking was printing. This belief is given strength by the fact that Dünne, a goldsmith, testified that he had received one hundred florins from Gutenberg for "that which belonged to printing."

Witnesses testified as to the great amount of time and money spent by the late Andrew Dritzehn on the new trade, and one witness told how Gutenberg sent to Dritzehn's house soon after his death to have the "four pieces lying in a press" taken out of the press and separated, as he did not wish anyone to see it.

This is commonly taken as meaning the printing press, and Gutenberg is believed to have been afraid that some one would learn of his invention, and take it from him.

The trial had been brought against Gutenberg by the heirs of Dritzehn, because Gutenberg had refused to receive them into the partnership in their brother's place. It was proved in the trial that an agreement had been entered upon by the partners, that upon the death of one of them, the secrets

of the trades need not be divulged to his heirs, but a certain amount of money should be paid to them. Gutenberg, therefore, won the case. He seems to have been discouraged, however, and soon after left Strasburg.

There has been much controversy as to whether Gutenberg worked with movable types while in Strasburg. The records of this trial seem to point to the fact that some kind of printing was done at Mentz, and as Gutenberg brought the art to such perfection in the 42 line Bible, printed comparatively soon after this, it is thought he must, at least, have experimented with movable types while in Strasburg. There is, however, no book which can be positively accredited to him while here.

From 1442-1448, we know nothing of Gutenberg.

AT MENTZ.

In 1448, Gutenberg appears at Mentz as a borrower of money from his kinsman, Geltus. Legal documents have been found in which this Geltus borrows 150 guilders for Gutenberg, on which he (Geltus) promised to pay interest of 8 1/2 guilders.

Gutenberg's uncle, Johann Gensfleisch, soon comes to his aid, and with his assistance, Gutenberg rents a private dwelling house (Zum Jungen) in which to carry on his printing.

Gutenberg soon spends the money borrowed for him, and once more is forced to look for aid.

In 1450, John Fust, a wealthy goldsmith of Mentz, becomes interested in the new art and makes a contract with Gutenberg, by which he (Fust) is to send Gutenberg 800 florins for five years, and is to advance 300 florins a year for parchment, paper, ink etc., when Gutenberg is ready to print. Gutenberg was to pay 6% interest, and his printing press and printing materials are mortgaged as security for repayment of the money advanced.

TRIAL BY FUST.

In 1455, Fust brought suit against Gutenberg for non-payment of money loaned. Gutenberg was wholly unprepared to defend himself and lost the suit. His press, types and tools were therefore seized by Fust. Gutenberg had previously taken Peter Schoeffer into his employ as caligrapher, and Fust is accused of taking this means of getting rid of Gutenberg, in order that he and Schoeffer might continue the work, and receive the credit of the invention. It seems certain that Gutenberg was unfairly treated by Fust, and all of his labors for these five years profited him nothing, but were made a means of profit to Fust and Schoeffer.

LATER LIFE.

After the trial, Gutenberg was once more left without types or tools, but he was not yet discouraged, and again started a printing press, his friends

having supplied him ^{with} money. He began his work with this press in 1456. Several books and pamphlets are attributed to Gutenberg while working at this press. He continued to work here until 1462.

In 1462, a civil strife arose in Mentz. The Archbishop, Count of Nassau, supported by the Pope, Pius II, laid siege to Mentz which was held by Dether, Count of Isenberg, who had been made Archbishop and Elector of Mentz with the consent of the majority of the people. The city was taken by Adolph, after it was nearly ruined by the war.

In 1465, Archbishop Adolph II made Gutenberg a gentleman of his court. The act of appointment has been preserved.

"We, Adolph, elected and confirmed Archbishop of Mentz, acknowledge that we have considered the agreeable and voluntary service which our dear and faithful Johan Gutenberg has rendered unto us, and our bishopric, and have appointed and accepted him as our servant and courtier. Nor shall we remove him from our service as long as he lives, and in order that he may enjoy it the more, we will clothe every year when we clothe our ordinary suite, always like our noblemen, and give him our court dress; also every year twenty mout of corn and two voer of wine for the use of his house, free of duty, as long as he lives, but on condition that he shall not sell it or give it away. Which has been promised us in good faith by Johan Gutenberg, Eltville, Thursday after St. Anthony, 1465."

DEATH. ⁸

Gutenberg, therefore, spent the closing years of his life at the court of Adolph. He died in 1468. The fact that he died in possession of a printing press is proved by the following document:

"I, Conrad Homery, doctor, make known by this letter, that his Highness, my gracious and well beloved Prince Adolph, Archbishop of Mentz, has graciously caused to be delivered to me, the forms, characters, tools and other objects relating to printing which Johann Gutenberg left at his death, and which belonged to me and belong to me still, but for the pleasure of his Highness, I have bound myself, and am so bound by this letter never to use them in any other place than Mayence, and moreover, only to sell them in preference, to a citizen of which place who shall offer an equal price with any other. In faith of which declaration, I have appended my seal to this present. Given in the year, 1468, the Friday after the festival of St. Matthew, (Feb. 26)"

This seems to be conclusive evidence that Gutenberg was in possession of a press at his death, and that the belief that the brothers Bechtermuntze

*Van der Linde, Haarlem legend of the invention of printing, 1871, P., 29.

°Humphreys H.N., History of printing, 1868. P., 80

who printed at Eltville, had come into possession of his types before his death, can not be true.

Gutenberg was buried in the convent of the Franciscans. An epitaph was placed here, but it no longer exists.

Before going further, it may be well to give the evidence given in favor of Gutenberg as the inventor of printing.

EVIDENCE IN FAVOR OF GUTENBERG AS THE INVENTOR OF PRINTING.

In order to prove Gutenberg the inventor of printing, it is first necessary to prove that no printing from movable type was done in Holland previous to that done by Gutenberg.

The records upon which Coster's claims are based, will, therefore, have to be disregarded or proved to be false.

In the case of the Cologne chronicle, the followers of Gutenberg get out of the difficulty by saying that Zell referred to block books instead of books printed with movable types, when he spoke of the Donatuses from which Gutenberg conceived the idea of movable type.

The accounts of the authors quoted in Coster's favor, are believed by these men to be wholly unreliable, and the results of an unfounded rumor which spread through Holland and finally gained credence.

Junius is not considered as a reliable authority upon the subject, and his account of the invention is held up to ridicule as inaccurate and impossible. Van der Linde, one of the most active opponents of the Coster claims, goes so far as to denounce Junius as an unreliable historian with little regard for the truth.

There is comparatively little direct evidence in Gutenberg's favor. Mr. Hessels, who spent much time in investigation of the subject, confesses in his "Gutenberg. Was he the inventor of printing?" that he does not feel able to answer the question after his extensive investigation.

The direct evidence in favor of Gutenberg is as follows:

In 1886, M. Jules Philippi in his Origin of printing in Paris, tells how in examining the copies of Gasparini Pergamensis Orthographia, printed at Paris in 1472, he found a prologue by Fichet, printed with the same Sorbonne types as the rest of the volume. It reads as follows: *[†]Imagine that the friends of literature will receive great benefits from the art invented by the new sort of printers, who in these our days have (like warriors from the Trojan horse) issued from the womb of Germany and scattered themselves abroad. In this country (France) the story is that a certain John Gutenberg

*Blades W. Books in chains and other bibliographical essays. 1892, P. 150

not far from Mayence was the first inventor of the printing art, by means of which books are made, not with a reed as of old, nor with a pen as in our days, but with metal characters."

In 1494, two professors of Heidelberg composed some verses in honor of Johannes Gensfleisch whom they called "primus librorum impressor" and "impressoriae artis inventor primus."

In 1505, the German translation of Livy, printed by Johann Schoeffer, son of Peter Schoeffer, states in the preface that "Johann Guterbergh" was the inventor of printing, and that Fust and Peter Schoeffer were improvers of the art.

The fact that ^{the} art of printing was invented by a citizen of Mayence named Gutenberg is recorded in the chronicle of the archbishop of Mentz, compiled by Count Wilhelm von Zimmern. It speaks of Gutenberg as "a worthy citizen who devoted to the invention all his time and resources, and brought it to a successful completion."

The other evidences given in attempting to prove Gutenberg the inventor of printing mention him as a printer only, not as the inventor of printing.

The fact that Gutenberg was a real man, concerning whom we have a good deal of knowledge, while Coster is merely a myth, concerning whom nothing is known, is probably the cause of Gutenberg's being so unäversally accepted as the inventor of printing.

Gutenberg's name stands in none of his books and he at no time proclaims himself the inventor of printing. It seems that it would have been natural for him to have made himself known as the inventor, if he had been such, but his failure to do so has been accounted for by some as due to his extreme modesty, and his utter indifference to his own glory, if he might only present the new art to the world for its own good.

FUST.

Johann Fust had such important dealings with Gutenberg, and he himself, with Peter Schoeffer's aid, did so much of importance in the history of early printing, that it may be well to give a few facts concerning his life.

Fust was a prominent citizen of Mentz. He was born about 1335. In 1420, he married his wife Margaret. Their only child was Conrad Fust, whose daughter, Christian, was married to Peter Schoeffer.

Fust had been a goldsmith, previous to his connection with Gutenberg.

His conduct toward Gutenberg seems to be most uncharitable. He was evidently an unscrupulous business man, who did not stop at anything that would better his financial condition. After his separation from Gutenberg, he continued to print, associating with him Peter Schoeffer.

He had no scruples about using Gutenberg's types and tools, and himself taking credit for the printing with them.

It seems evident that Fust was for the most part, the business head of the partnership formed with Schoeffer, while Schoeffer did the actual work.

SCHOEFFER.

Peter Schoeffer, previously mentioned as the pupil of Gutenberg, and the partner of Fust, was born in a little village near Mentz, called Gernzheim, about 1430.

The fact that he was copying books in Paris before his twentieth year is shown by an inscription found in an old manuscript book: "This book was completed by me, Peter of Gernzheim, or of Mentz, during the year 1449, in the most glorious university of Paris."

It is not known when Schoeffer entered Gutenberg's office, but it is known that he was taught the art of printing by Gutenberg. His work done while in partnership with Fust is thought to have surpassed that of Gutenberg.

Schoeffer was the first printer to use a colophon. This first one was printed in the Psalter of 1457. He also used the first printer's mark in this same psalter. Many of his colophons are distasteful for their boastfulness, but his books excel in the beauty of their type and their colored initials.

He carried on the business after Fust's death, and printed an unusually large number of books. In 1470, he printed a catalogue of all the books printed and for sale by him.

He died in the year 1503.

TYPES AND MATERIALS USED BY THE EARLY PRINTERS.

In studying the early printers, it is very interesting to know of the types and materials used by them. This question is, however, very uncertain, and we have many different theories as to the kind of types used by them.

The Encyclopaedia Britannica gives in substance the following information concerning types.

*WOODEN TYPES.

It is believed by many that the inventors of movable types first used wooden types which were held together by a string passed through a hole punched in them.

Junius writes as if the Dutch Speculum were printed from movable wooden types.

Ed 3

*Encyclopaedia Britannica, Typography, 23:692-3.

In 1548, Theodore Bibliander speaks of wooden types. He says the printers first cut their letters in wood blocks the size of a whole page, but that they finally devised movable wooden types, perforated and joined one to another by a thread. He does not say he has ever seen such types himself, but Daniel Speckel or Speclin, who described the invention to Mentelin, said that he saw some of the types at Strasburg.

Angelo Rocca (in the note quoted under Coster's evidence) says that the "types used by the inventors of printing were perforated and connected together with a thread which was passed through them." He also says he remembers to have seen specimens of these types at Venice. He does not say, however, that they were wooden, but this has been inferred.

Paulus Pater said, in 1710, that he had seen wooden types made from the trunk of a tree and perforated in the centre to enable them to be joined together. He asserts that he had seen these in the office of Fust and Schoeffer at Mentz.

One fact that causes many to believe in the theory of wooden types is that the letters in some of the earliest printed books vary in a way they would not have done, if the types had been cast in a mold form or matrix.

Practical experiments of printing from movable types have been made, but the results seem to vary. Some of the experimenters declare it to be wholly possible to print from them, and others say it is impossible.

There are no books in existence which can be proved to have been printed from movable wooden types, but as it is generally believed that the first books were printed page by page, and that, therefore, only a small quantity of type was necessary at a time, it seems wholly possible that these wooden types were used.

There are various other theories as to the kinds of types used by the early printers. One of the most important is the theory that the first types were what are known as sculpto fusi types.

SCULPTO FUSI TYPES.

These are types in which the shank has been cast in a quadrilateral mold, and the "faces", that is, characters or letters had been engraved by hand afterwards. This would account for the irregularities in the type.

There are also various theories as to the way in which the types were cast by the early printers, if they were cast.

TYPES CAST IN SAND.

This mode of casting type is believed in by many. It is thought that it was necessary to afterwards touch up the types by hand because of the imperfect method of casting, and this accounts for the irregularities in the letters.

TYPES CAST IN CLAY MOLDS.

Ottley believes in this theory. He thinks that the types were made by pouring melted lead or other soft metal into molds of earth or plaster in the manner in which statues and other articles of metal are cast.

This seems impracticable as molds would be injured after first types were cast in them, and if as Ottley suggests, old types cast out of the molds were used, these would gradually change shape. It seems more probable that a sufficient number of molds for the casting of enough type for one page should be made from one set of models, and the differences in the type would then be due to the differences made in casting the molds.

POLYTYPE.

This has been described as an early adoption of stereotype. It was the cast or fac-simile copy of an engraved block matter in type. The process is described as follows: The printer first molded a page of some work, in cooling metal, so as to get a matrix plate impression of the whole page. They would then pour a liquid metal over this plate and press this liquid matter evenly by a roller or cylinder and make it penetrate into all the hollows and corners of the letters.

This metal sheet would then be lifted from the matrix, and would afford a surface upon which the letters would stand out in reverse and in relief. He believes that these metal pieces were then separated, and made mobile.

These forms were then fixed on wooden shanks. This theory set forth by Sambinet is endorsed by Firmin-Didot, the renowned type-founder and printer of Sambinet's day. The Psalter of 1457 is pointed out as a model of this kind of printing, but it seems impossible to believe it was printed in this way.

PRESS USED BY THE EARLY PRINTERS.

Little has been written about the press used by the early printers. It is usually described as a wooden press which resembled a wine press. It was very simple, consisting of a board, acted upon by a press. The type was placed on the board, then ink, the paper laid over it and the screw turned by hand with a lever.

LIST OF BOOKS PRINTED WITH
MOVABLE TYPE FROM ITS INVENTION TO ITS
DISPERSION IN 1462.

WORKS ATTRIBUTED TO COSTER.

1430. Speculum humanae salvationis.

"Mirror of human salvation."

This was a popular religious work which had previously been printed as a block book. There are four editions, two in Latin and two in Dutch.

First edition contains several xylographic pages. The upper half of each page of this edition is occupied with wood cuts in brown. The text in heavy block type occupies the lower half of the page.

The text is in Latin. Every line of verse begins with a capital letter. The period is the only mark of punctuation used. It is a small folio, printed on one side of the paper only. A preface is written in rhyme.

Second edition has no xylographic pages. It is written in Latin.

Third edition is written in Dutch prose.

Fourth edition is also written in Dutch prose, but is inferior in printing.

In a copy found at Haarlem, this inscription is written in Dutch:

"Speculum salutis, earliest production of Laurens Coster, inventor of typography, who printed in Haarlem about the year 1440."

This edition is printed in much smaller type than the others.

Junius writes of these editions of the *Speculum* being printed on one side only, and of the sheets then being pasted together, but Humphreys says that none of the copies examined by him have had the leaves pasted in this way.

To prove that the *Speculum* was printed from movable type and not from xylographic blocks, a certain defect which occurs again and again in the letters has been pointed out, also the fact that in many cases, a letter has been mistaken for one similarly formed.

The fact that all the copies of the *Speculum* may be traced to Holland, and that the letters greatly resemble those of the Dutch manuscript has been accepted as evidence that the books were printed in Holland.

The *Speculum* was the only book which was accredited to Coster himself, but there were other books which have been considered as being printed with Coster's types by the workman who stole them. These

are the Tracts of Petrus Hispanus, the Doctrinale of Alexander Gallus, De Catonis Disticha and the Latin grammar of Aelius Donatus.

Tracts of Petrus Hispanus.

No remains of this work are known. Junius' assertion that it was printed with Coster's type being our only evidence.

Doctrinale of Alexander Gallus.

Several fragments of this have been found. There are four different editions. Humphreys, after an examination of this work, says that he believes the types are not the same as those used in the Speculum, but that they are very similar. He believes that they were copied from the Speculum types.

De Catonis Disticha.

Fragments of this work are found in the Spencer library, and are pronounced by Humphreys to greatly resemble the Speculum in type.

Donatus, or Latin grammar of Aelius Donatus.

This appears to have been printed with the same types as the Speculum. There are six editions. It was from the Donatus, according to Zell, in the Cologne chronicle, that Gutenberg got his idea of movable type.

WORKS ATTRIBUTED TO GUTENBERG.

1454. Donatus

This is printed in type similar to that of the 42 line Bible. Four leaves of this book are now preserved in the National library at Paris. The Donatus was a small quarto and had 27 lines to the page. It is believed by some that Gutenberg printed this book while at Strasburg. Others believe that he printed it at Mentz while preparing to print the Bible.

1454. Letters of Indulgence

The edition of 31 lines is attributed to Gutenberg. This was printed from movable types upon one side of a piece of parchment. There are many abbreviations, the lines are not even, and the capital letters of the text are poorly drawn. The capitals are printed as well as the rest of the type and appear to be cast in metal. These letters of Indulgence were sent by the Pope, Nicholas V, to those members of the Catholic church who would aid the king of Cyprus against the Turks. Eighteen copies of these Indulgences are known.

1455. Bible of 42 lines, called Mazarin Bible or Gutenberg Bible.

There is much controversy as to whether this book was printed by Gutenberg, or by Fust and Schoeffer. It seems to be generally believed that the type was made by Gutenberg, at least, though it may be possible

that the actual printing was done by Fust and Schoeffer.

This Bible gets its name "Mazarin Bible" from the fact that the first known copy of it was found in the library of Cardinal Mazarin.

The Bible was printed in Latin. It contained 1282 pages, with two columns to a page and there were usually 42 lines to the column. There was a large margin for ornamental borders, and the places for the initial letters were left blank, to be filled in by the rubricator and illuminator. The type was very black, but was ungraceful and crowded. The period, colon, and hyphen were the only marks of punctuation used. The lines sometimes differed in length. This Bible bore no name and no date.

1458. Bible of 36 lines or Bamberg Bible.

This is so called, because of the fact that all the known copies were found in the neighborhood of Bamberg.

Gutenberg is believed to have printed this at his independent office, after his separation from Fust and Schoeffer.

It is inferior in type to the Bible of 42 lines. The type is also larger. There were 1764 pages. Each page has two columns of 36 lines each. It is made up, for the most part, in sections of 18 leaves.

The first section is inferior to the others in workmanship. The pages are out of register, and the indentation of paper by too hard pressure is marked. The other sections are much superior in register and impression. A blank space is left for every large initial. Red ink was not used by the printer. The illuminator passed his brush over the letters which were rubricated.

A written note dated 1461 is found in one copy of this Bible. An account book of the Abbey of St. Michael of Bamberg, dated 1460 has in its binding some leaves of this Bible. It could not, therefore, have been printed before the 42 line Bible.

The following pamphlets are supposed to have been printed by Gutenberg at his press in Mentz between 1455 and 1462.

(1) Tractatus de celebratione missarum.

"a treatise on the celebration of the mass" the book is a small quarto of 24 lines.

(2) Calender or almanac for 1460 in Latin.

This is a quarto of six leaves.

(3) Hennan de Saldis, Speculum Sacerdoti.

"Mirror of the clergy" by Hennann of Saldis.
"Happily perfected and printed at Mentz." This is a quarto of 16 leaves.

(4) Treatise on the necessity of councils in German.

This is a quarto of 24 leaves.

(5) Dialogus inter Hugonem, Cathonem et Oliverem super libertate ecclesiastica

"A dialogue between Cato, Hugo and Oliver about ecclesiastical liberty."

This is a quarto of 20 leaves.

(6) Mattheus de Crocovia. Tractus rationis.

"Treaise on reason" by Mattheus of Crocovia.

(7) Thomas Aquinas. Summa de articulis fidei.

"The articles of faith by Thomas Aquinas."

This is a quarto of twelve leaves.

1460. Catholicon

This is a Latin grammar and an etymological dictionary in five divisions. It is very rare and is of considerable literary merit.

It is a folio of 748 pages of double columns. There are 66 lines to the column. In some copies a summary of the contents is given in red ink, and ornamented with an engraving which fills one side of the first page.

This Catholicon is remarkable for its Colophon, which is believed to have been written by Gutenberg. It is as follows: *"With the aid of the Most High Who unlcoses the tongues of infants and often reveals to babes that which is sealed to learned men, this admirable book, the Catholicon was finished in the year of the incarnation of our Saviour MCCCCLX in the mother country of Mayence, famous city of Germany, which God in His clemency, has designed to render the most illustrious and first of cities; and this book was perfected without the usual help of pen or style, but by the admirable linking of forms and types."

This Catholicon is sometimes attributed to printers at Eltville who later published Vocabularium ex quo.

1461. Letters of Indulgence.

This edition of the Letters of Indulgence is attributed to Gutenberg. It resembles the 30 and 31 line editions, but is cast from different matrixes and from different mold. The letters are rudely cut and the lines are even.

This is the last work attributed to Gutenberg. It was in 1462 that

*Bouchot, Henri, (The) book; its printers, illustrators and binders, 1889. P. 33.

he left Mentz and went to Eltville as a gentleman of the court of Adolph. It is not probable, therefore, that he did any printing after this appointment.

BOOKS PRINTED BY FUST AND SCHOEFFER BEFORE 1462.

1455. Bible of 42 lines, or Mazarin Bible, or Gutenberg Bible.

See Bible of 42 lines in list of books attributed to Gutenberg.

1457. Psalmorum codex, or Psalter.

This is a folio of 175 leaves. It is the first book with printed date. Only nine copies are known at the present time.

The leaves are nearly square and are smaller than those of the Bible of 42 lines. The types resemble those of the Bible of 42 lines, and it is possible that they may have been designed by Gutenberg. There are many letters and lines in red ink.

The Psalter is especially famous for its wonderful capitals in red and blue inks. There has been much discussion as to whether these capitals were printed in colors or printed in black and illuminated. The initial B at the beginning of the psalm "Beatus vir" is often reproduced. It is an example of "skilful engraving, brilliant color, and faultless register." The design is most beautiful.

This Psalter has been pronounced to be almost faultless in execution by some, and most faulty by others.

The Psalter ends with a colophon which gives the credit of the invention of printing to Fust and Schoeffer and makes no mention of Gutenberg. The first printer's mark is also given here. It is composed of two shields hanging on a branch of wood. On the shields are drawn the printer's rules.

There were four subsequent editions of this Psalter printed.

1458. (?) Canon of mass.

This is printed by itself for inserting in copies of the missal. It is printed on vellum. Two copies are known, one at the Bodleian, one in the Imperial library at St. Petersburg.

The copy in the Bodleian library consists of twelve leaves and is printed in the large type of the Psalter. It has the same beautiful initial letters, the letter T of the "Te igitur" commencing the canon, being especially beautiful.

1459. Rationale Durandi.

This is an exposition by Durandus of the service of the church. It is a folio of 160 leaves, and has two columns to a page, and 63 lines to the column. It has many rubricated letters and colored initials. The type of this book differs from that of the 42 line Bible and the

Psalter. It is more like the ordinary writing of the time, and less like the stiff writing used by the scribes. It ended with a colophon similar to that in the Psalter, -boasting of the printed capitals.

Before(1460)? Donatuses

These are supposed to have been printed by Schoeffer before 1460, although no date is given. They are printed in the type of the 42 line Bible and have the colored capitals used in the Psalter.

It is believed that Schoeffer printed several ephemeral publications such as Bulls during the years 1459 and 1460.

The manifestos both for and against Bishop Dreither of Isenburg was printed at this time.

1460. Constitutions of Pope Clement V.

This is a large folio, with commentaries by Bishop John Andreus. It is remarkable for the care with which it was printed. The types are cast in even lines than the Rationale. It is distinguished for the marginal notes which are commentaries by John Andreus .

1462. Bible of 48 lines or Mayence Bible.

This is the first dated Bible. There are 10001 pages. It is a folio in great primer type. There are two columns to the page and 48 lines to the column. It was printed in two volumes. It has the same imprint as the Psalter, being printed in red. Some copies have Schoeffer's mark at the end of the first volume, and some have dates, others have neither. There is a colophon in some copies which resembles that of the Psalter, and is printed on the last page of the second volume.

Fust and Schoeffer printed many other books, but as this last date is that of the dispersion of printing, and it is the purpose of this thesis to treat only of printing up to the dispersion, it will be necessary to leave them here.

CONCLUSION.

It is shown from the preceding pages how many doubts and controversies there are concerning the history of early printing, and how almost impossible it is to form any definite opinions on the subject. It is still hoped that some document or other evidence will sometime be found to prove conclusively who was the inventor of printing. As to the minor points of controversy, as to who printed this or that book, and when it was printed, these will probably continue to be disputed as long as there is interest in the subject. It seems particularly unfortunate that the early printers did not date their books, and did not place their names in them as this would have given positive proof.

The study of such evidence as this is, is a particularly arduous one, as is testified to by the investigators, and is discouragingly lacking in definite results.

READING LIST
ON THE HISTORY OF MOVABLE TYPE FROM ITS INVENTION TO ITS DISPERSION
IN 1462.

Blades, William, Invention of Printing (see his Books in chains and other bibliographical papers, 1892, P. 133-200)

Takes up arguments in favor of both Gutenberg and Coster as inventor of printing and discusses these arguments impartially. Also gives list of books concerning the controversy printed since 1868.

✓ Bouchot, Henri. Invention of printing. (see his (The) book: its printers, illustrators and binders, 1889. P. 14-41)

Discusses claims of Gutenberg and Coster. Gives life of Gutenberg and description of early printed books.

Brief history of early printing. (see Scientific American supplement, 7 July 1900, 50:20501-2)

Very short outline of early printing. Illustration of presses used by Coster and Gutenberg.

De Vinne, Theodore, Low. Gutenberg anniversary. (see Outlook, 5 May 1900, 65:31-7)

Little concerning the anniversary. Gives sketch of Gutenberg's life and work.

✓ De Vinne, Theodore Low. Invention of printing Ed. 2 Lond. 1878 Trubner 21s o.p.

Devotes some space to block books, but the purpose of the book is to prove Gutenberg, not Coster, the inventor of printing from movable types. Also gives good life of Gutenberg.

✓ Duff, Edward Gordon. Invention of printing (see his Early printed books 1892 P., 21-38)

Valuable for description of first printed books.

Early printing and printers. (see Harper's new monthly magazine, Sept. 1855, 11:470-71)

Very short article. Little about invention.

✓ Hessels, J.H. Gutenberg. Was he in inventor of printing. Lond. 1882.

Full life of Gutenberg. List of books printed by him. Gives his claims to invention. Does not decide question of who was inventor.

Hoe, Robért. Introduction to typography. (see Johnson's universal cyclopaedia, 6:780-81)

Short sketch of the invention of typography.

✓ Humphreys, Henry Noel, Invention of printing and work of Coster, Gutenberg,

Fust and Schoeffer. (see his) History of the art of printing. 1868, P., 45-88)

Valuable discussion on the claim of Coster as opposed to Gutenberg. Contains beautiful full page illustration of early printed books with full descriptions. Full detailed life of Gutenberg.

John Gutenberg, (see Scribner's monthly May 1876, 12:73-85)

Short life of Gutenberg.

Marshall, David. Invention of printing, (see his Printing: an account of its invention and of William Caxton. 1877. P., 15-53)

Gives evidence in favor of Coster, also life of Gutenberg.

Morrison, M.A. Sketch of Gutenberg. (see Independent, 32 May 1900, 82:385-6)

Short life of Gutenberg.

Ottley, William Young. Inquiry concerning the invention of printing, Lond. 1863. Lilly 21S o.p.

Probably most valuable book in English on the controversy between Haarlem and Mentz. Gives epitome of principal writings on the subject up to 1863.

Origin of printing (see Harper's new monthly magazine, Oct. 1868, 37:637-41)

Quotes from ancient authors in regard to evidence concerning the invention.

Pearson, Emily C. Gutenberg (see her Gutenberg and the art of printing 1871 p., 8-211)

Gives long detailed biography of Gutenberg. Much given here for which there is no authority.

Proctor, Robert. (The) Gutenberg Bible. (see Library Jan 1901, 2:60-66)

Full description of Gutenberg Bible given. Article is a review of Dr. Schwenke's work on the subject.

Putnam, George Haven. (The) invention of printing. (see his Books and their makers in the Middle ages. 1896. 1:348-74.)

Short account of Coster's work, then detailed account of Gutenberg's life and work.

Spofford, Ainsworth, R. and others. Johann Gutenberg (see their Library of historic characters and famous events. 1890-1900. 5:383-90)

Short sketch of Gutenberg's life and the invention of printing.

Southward, John. Early printing (see Encyclopaedia Britannica, 23:684-85, 686-94)

Good outline of principal events in the invention of printing. Discussion of controversy as to who was the inventor of printing, quoting documents etc. Description of different editions of early printed books, and of different kinds of type and theor-

ies as to mode of casting type.

✓ Van der Linde, A. Haarlem legend of the invention of printing. Lond. 1871. Blades.

Attempts to prove Coster a myth and Gutenberg the true inventor of printing.

Whibley, C. Jubilee of the printing press (see North American review, 6 Oct. 1900, 171:861-71)

Treats of early printing in general. Very little concerning the invention.

LIST OF BOOKS ANALYZED.

Blades, William. Books in chains and other bibliographical papers N.Y. 1892. Armstrong \$1.25 (Book lover's library)

Bouchot, Henri. (The) book; its printers, illustrators and binders. N.Y. 1889. Scribners & Welford. \$7.50

Duff, Edward Gordon. Early printed books. Lond. 1892. Kegan Paul 6s. (Books about books.)

Humphreys, Henry, Noel. History of the art of printing. Ed. 2. Lond. 1868. Quatrach 635. o.p.

Marshall, David. Printing; an account of its invention, and of William Caxton, the first English printer. Lond. 1877. Guantin 16s. o.p.

Pearson, Emily C. Gutenberg and the art of printing. Bost. 1871. Noyes \$2.

Putnam, George Haven. Books and their makers in the middle ages 2v. N.Y. 1897. Putnam \$2.50

Spofford, Ainsworth Rand and others. eds. Library of historic characters and famous events 12v. Bost. 1898-1900. Art library publishing Co.

QUESTIONS.

1. Give arguments in favor of Coster as the inventor of printing.
2. Give arguments in favor of Gutenberg as the inventor of printing.
3. Give the story of Coster.
4. Give main facts in the life of Gutenberg.
5. Name and briefly describe a work attributed to Coster.
6. Name and briefly describe three of the principal works of Gutenberg giving date of each.
7. Name and briefly describe two important works of Faust and Schoeffer printed before 1462, giving dates of each.





